

Fig. 1
(Prior Art)

Spectra for Depth Profile of Charging SiO_2 on Si
(Si KLL Auger Spectra)

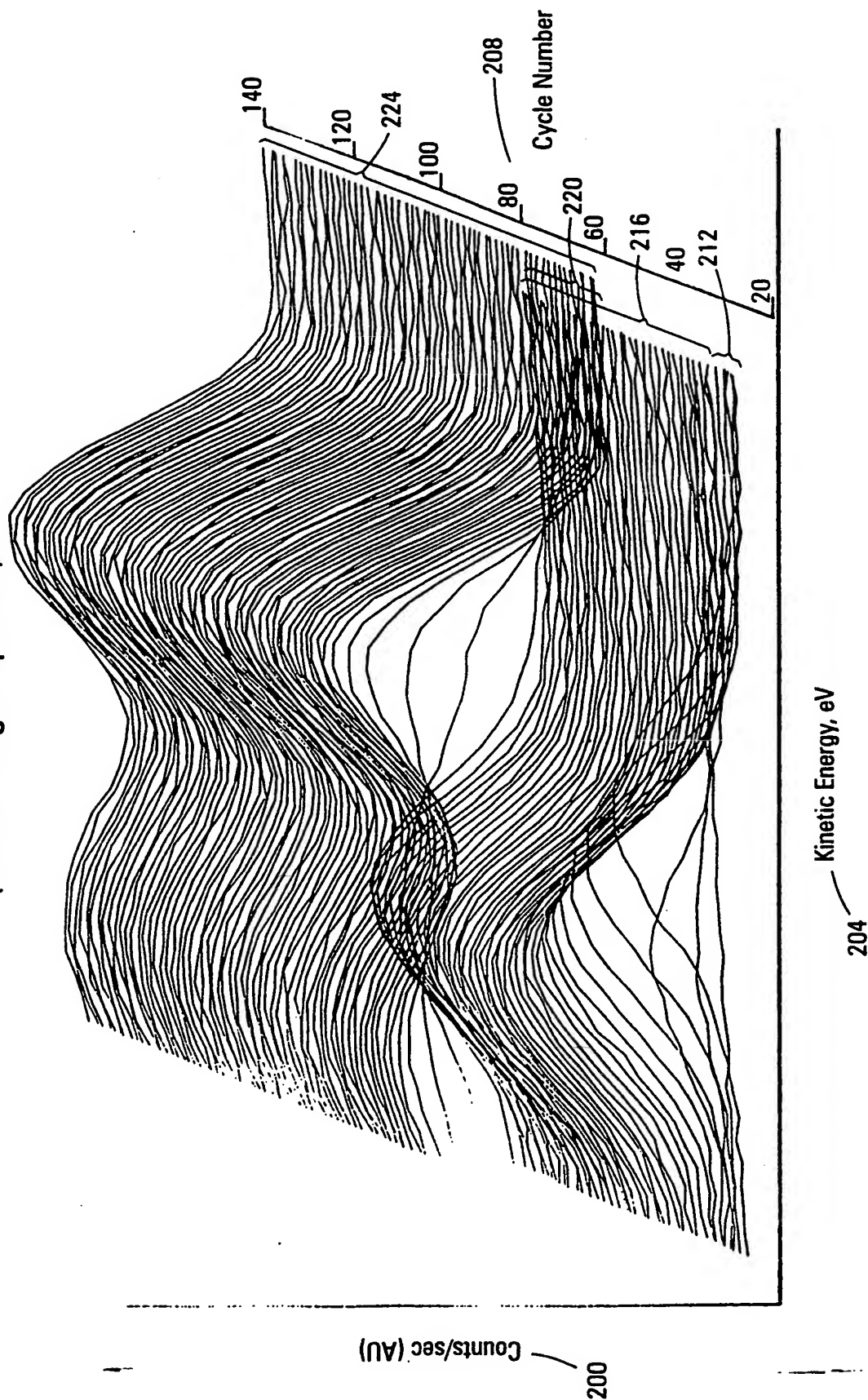


Fig. 2
(Prior Art)

Profiles of Scaled Target-Factor Weighting Factors from Factor Analysis of Uncompensated Auger Spectra from Charging SiO_2 on Si Substrate

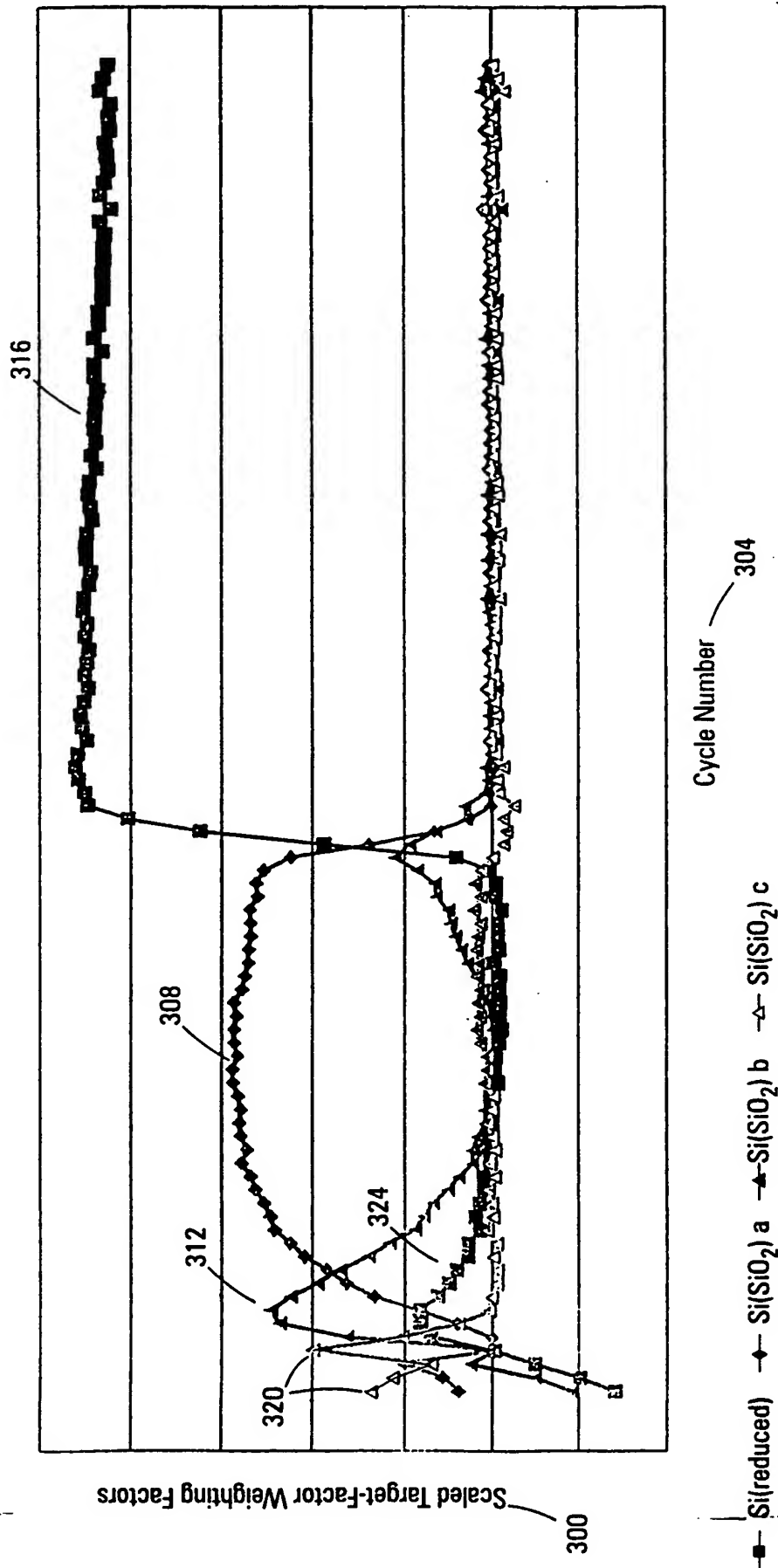


Fig. 3
(Prior Art)

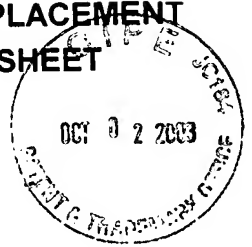
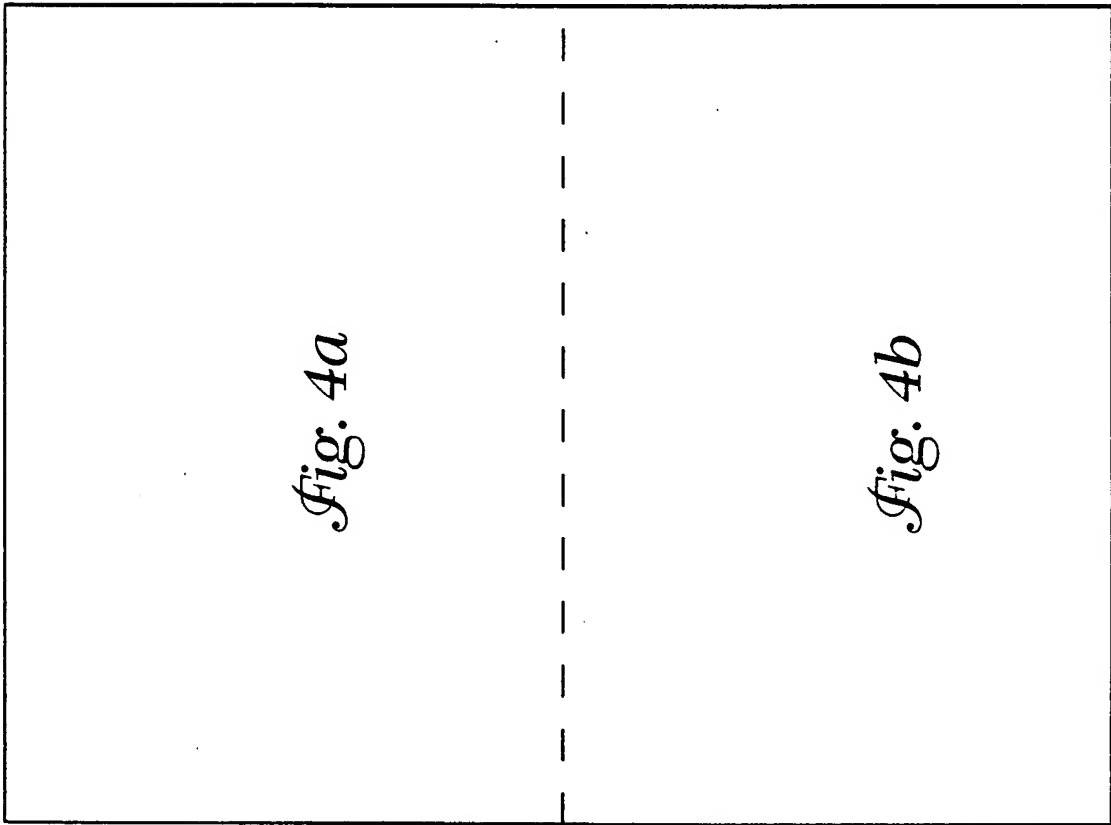


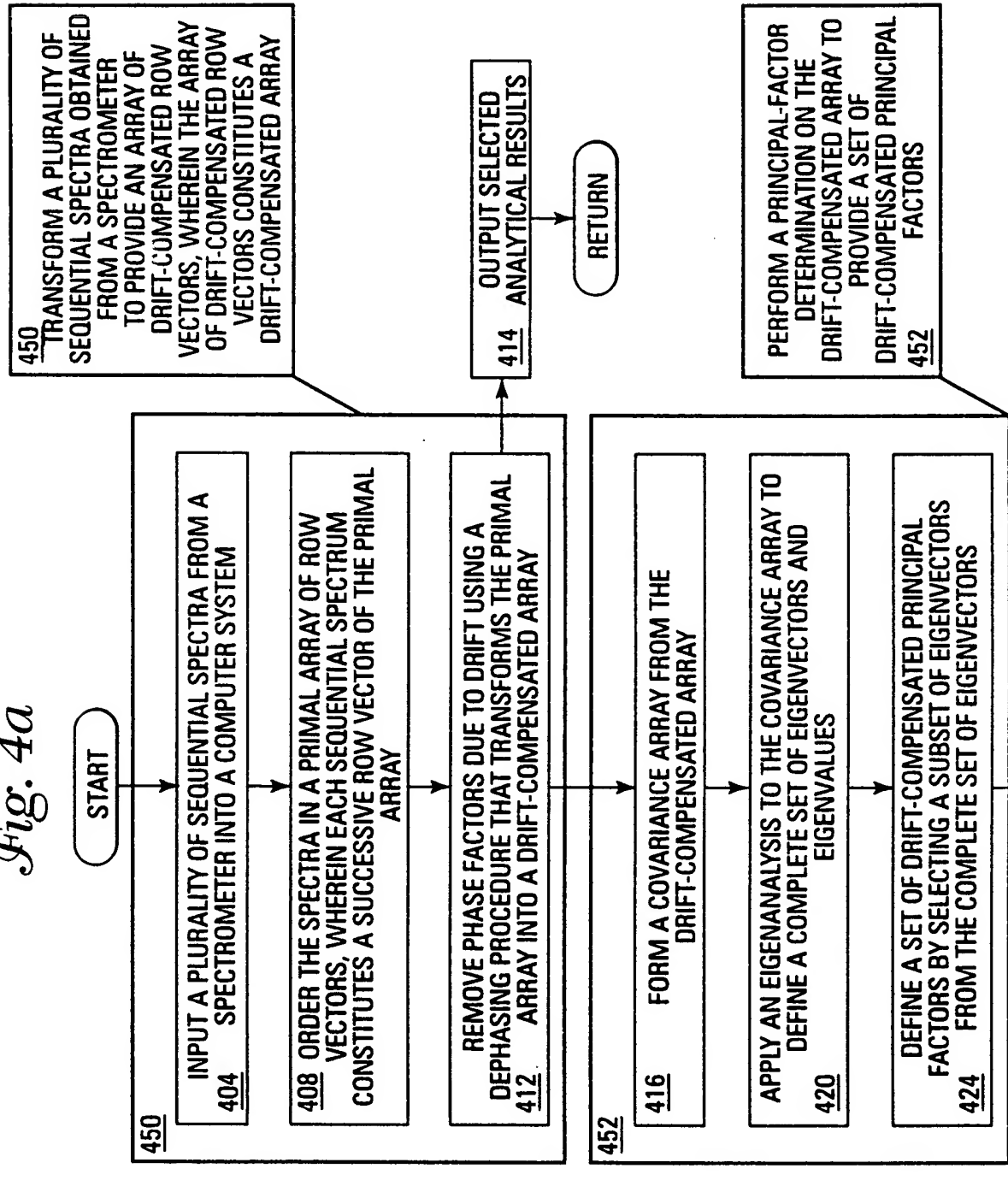
Fig. 4



400



Fig. 4a



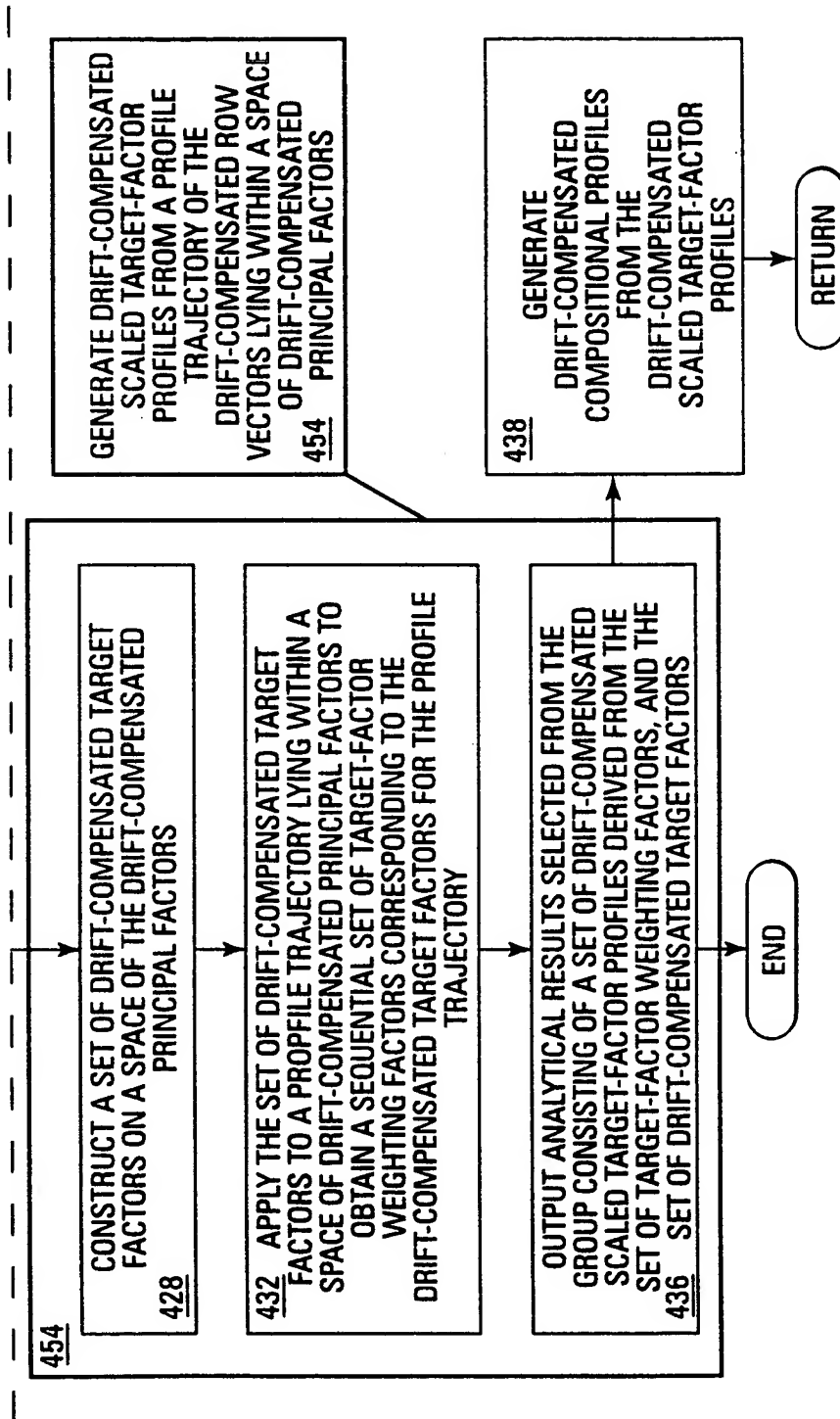
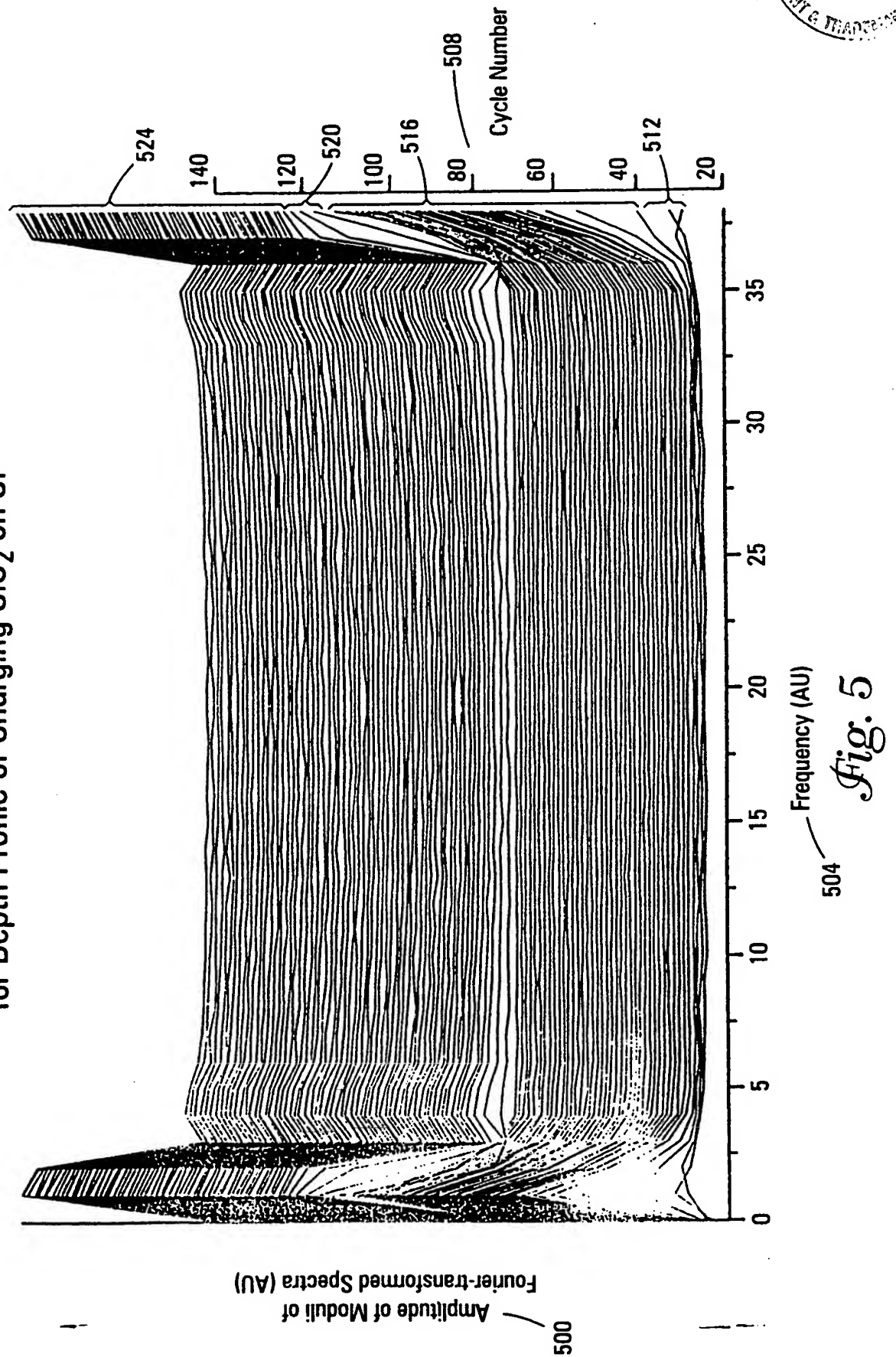


Fig. 4b

Moduli of Fourier-transformed Spectra
for Depth Profile of Charging SiO_2 on Si



Profiles of Scaled Target-Factor Weighting Factors from Factor Analysis of Moduli of Fast-Fourier-Transformed Auger Spectra from Charging SiO_2 on Si Substrate

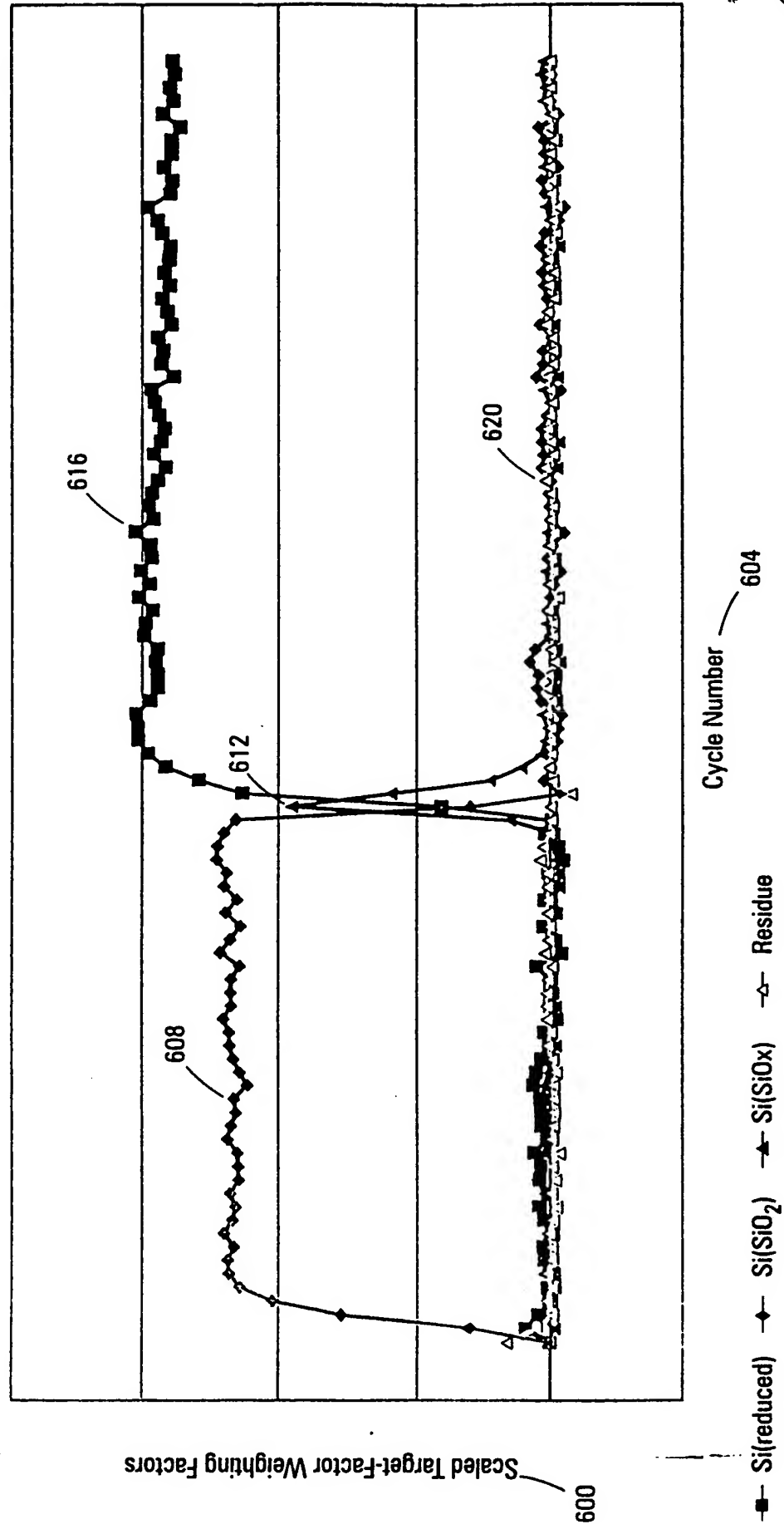


Fig. 6



Drift-Compensated Spectra Synthesized
from Selected Reference Spectra Fit to Primal Spectra
for Depth Profile of Charging SiO_2 on Si

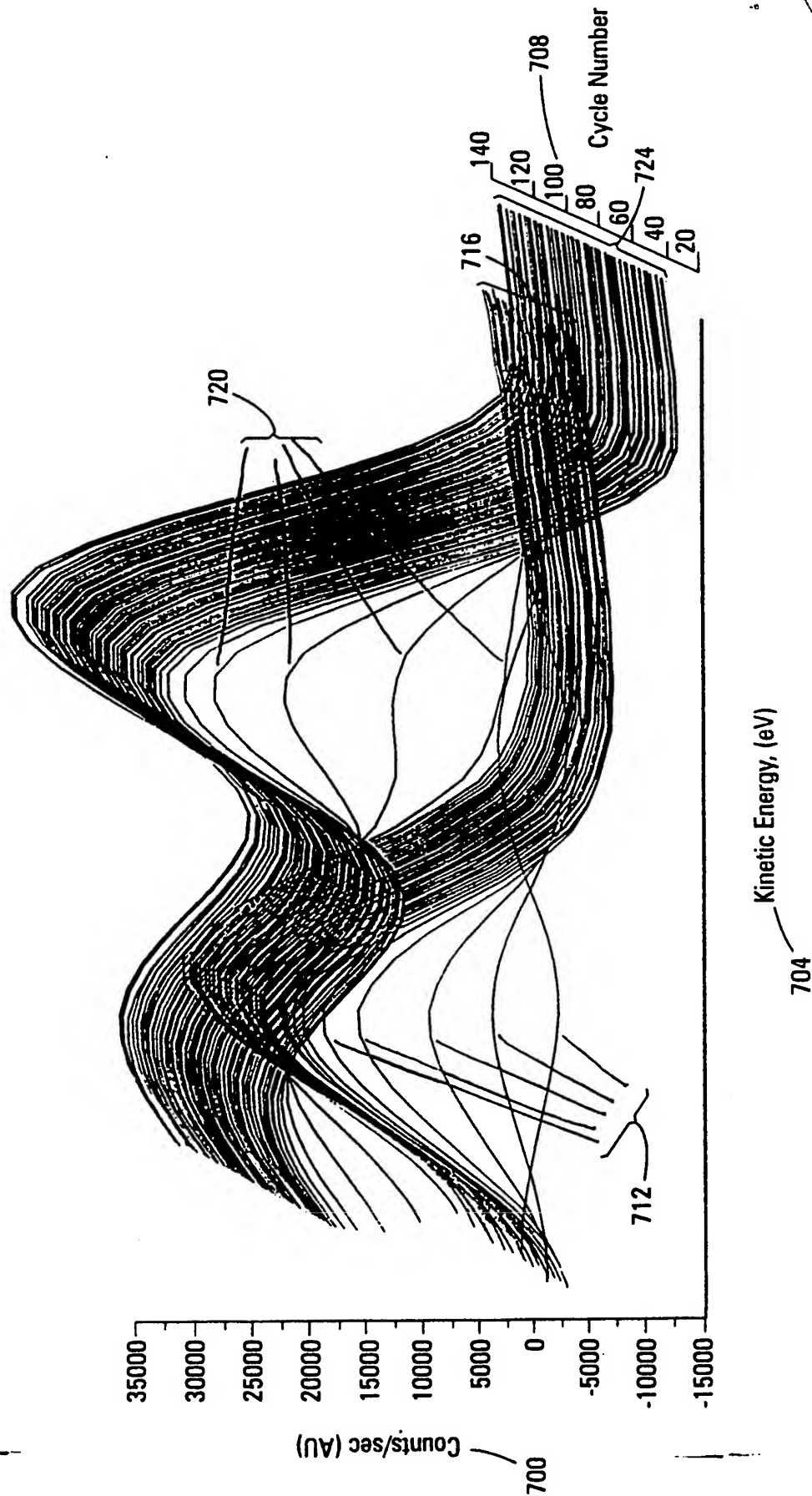
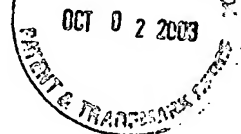


Fig. 7

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Profiles of Scaled Target-Factor Weighting Factors from Nonlinear-
Least-Squares Fitting of Selected Reference Spectra to Primal Spectra and
Profile of Principle Residue Weighting Factor from Eigenanalysis of Residues

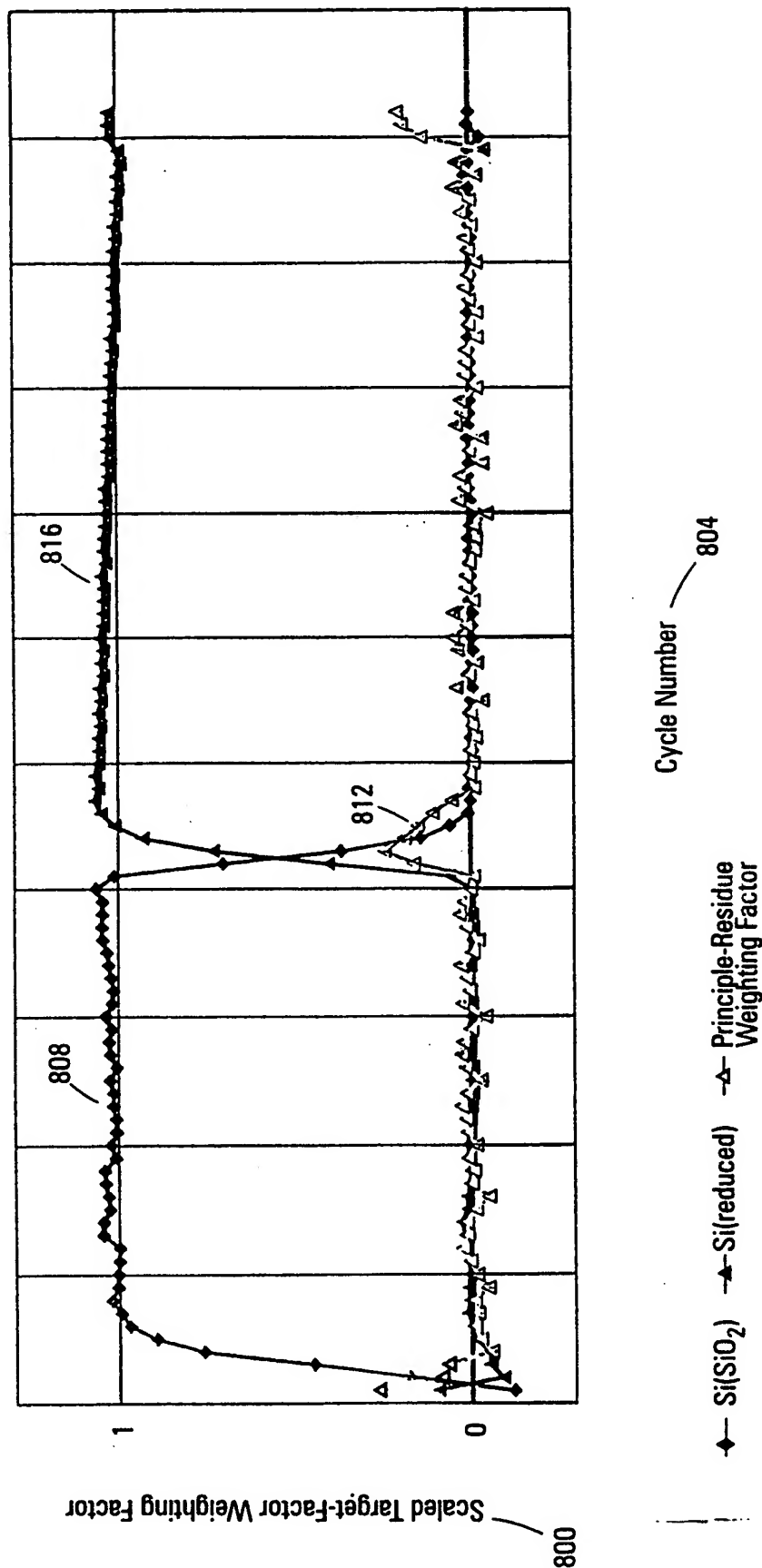
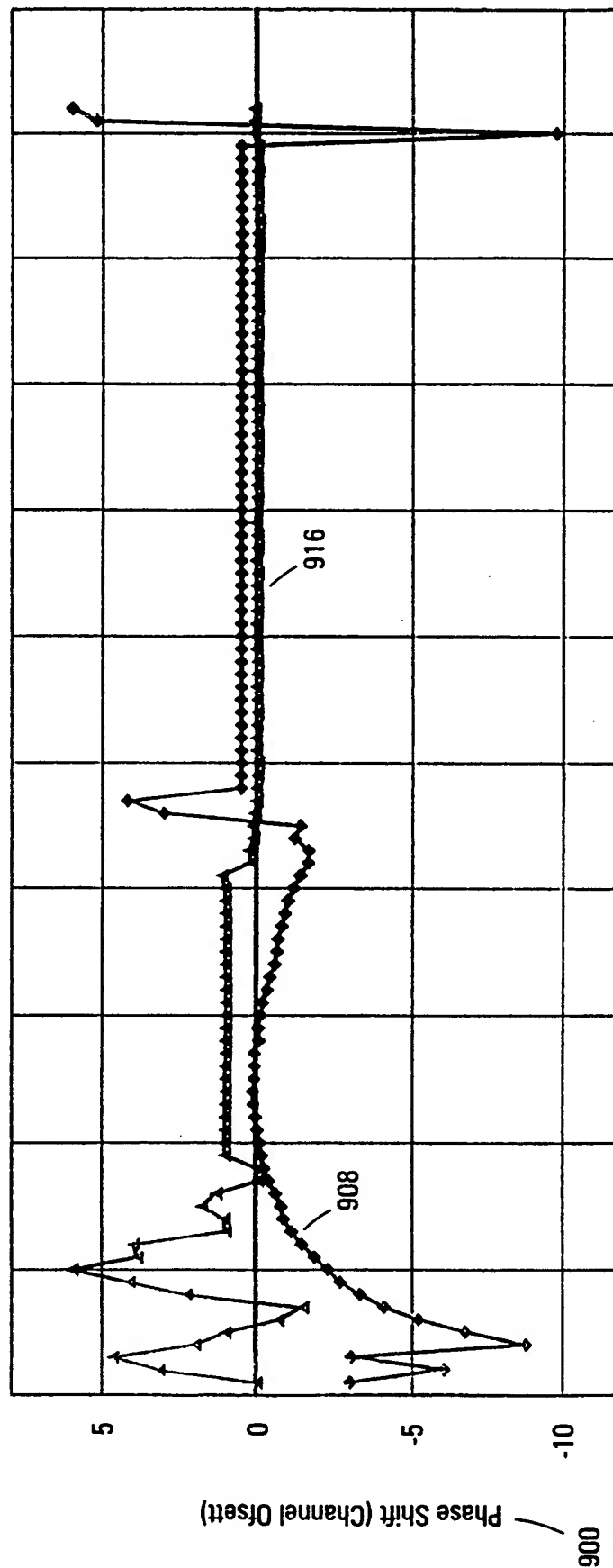


Fig. 8



Profiles of Phase Factors for Selected Reference
Spectra Obtained from Fitting to Primal Spectra



Cycle Number — 904

Fig. 9

◆— Si(SiO₂) —▲— Si(reduced)

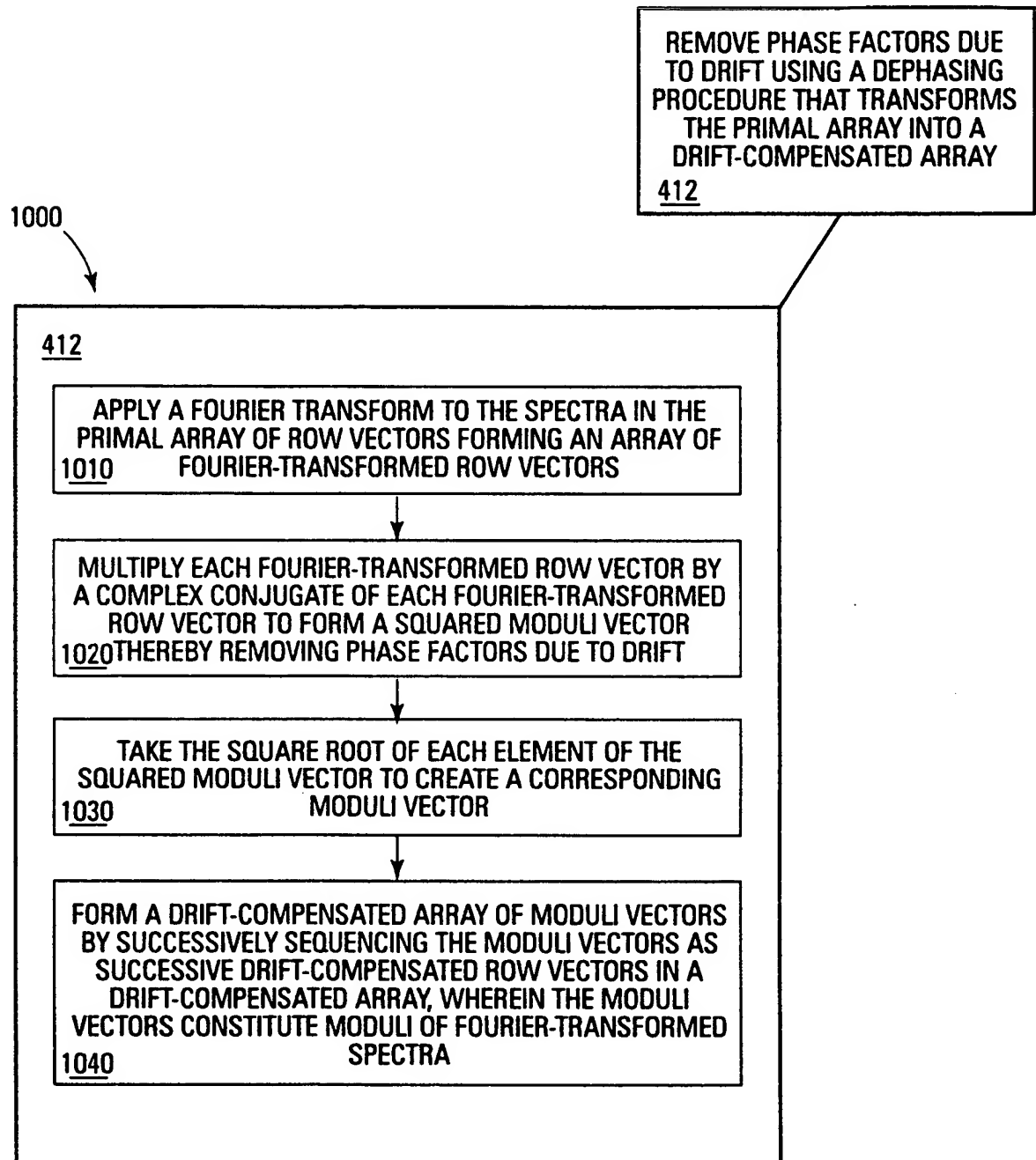


Fig. 10

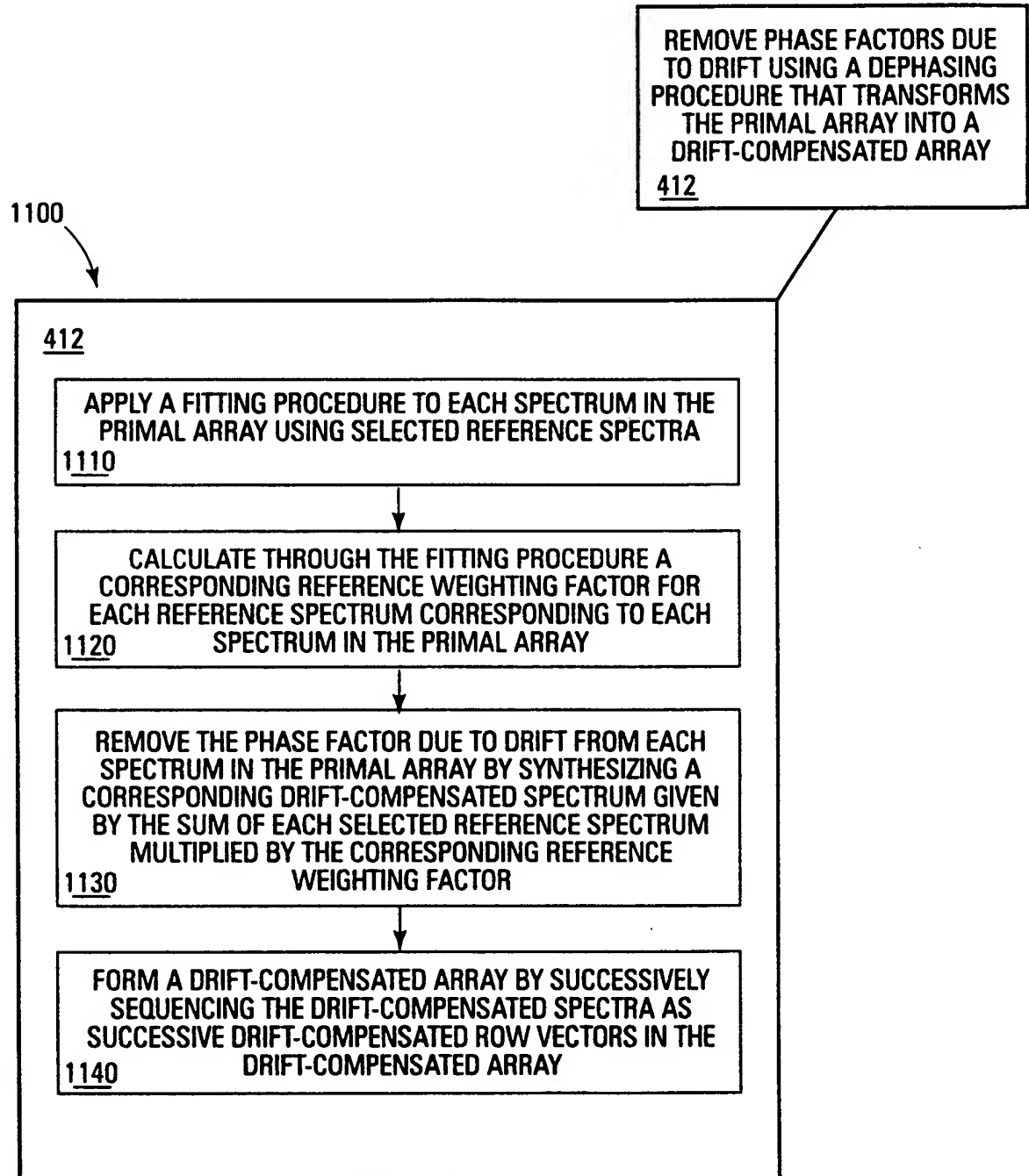
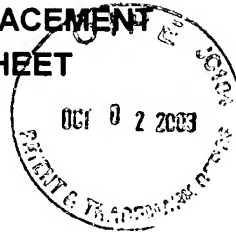


Fig. 11

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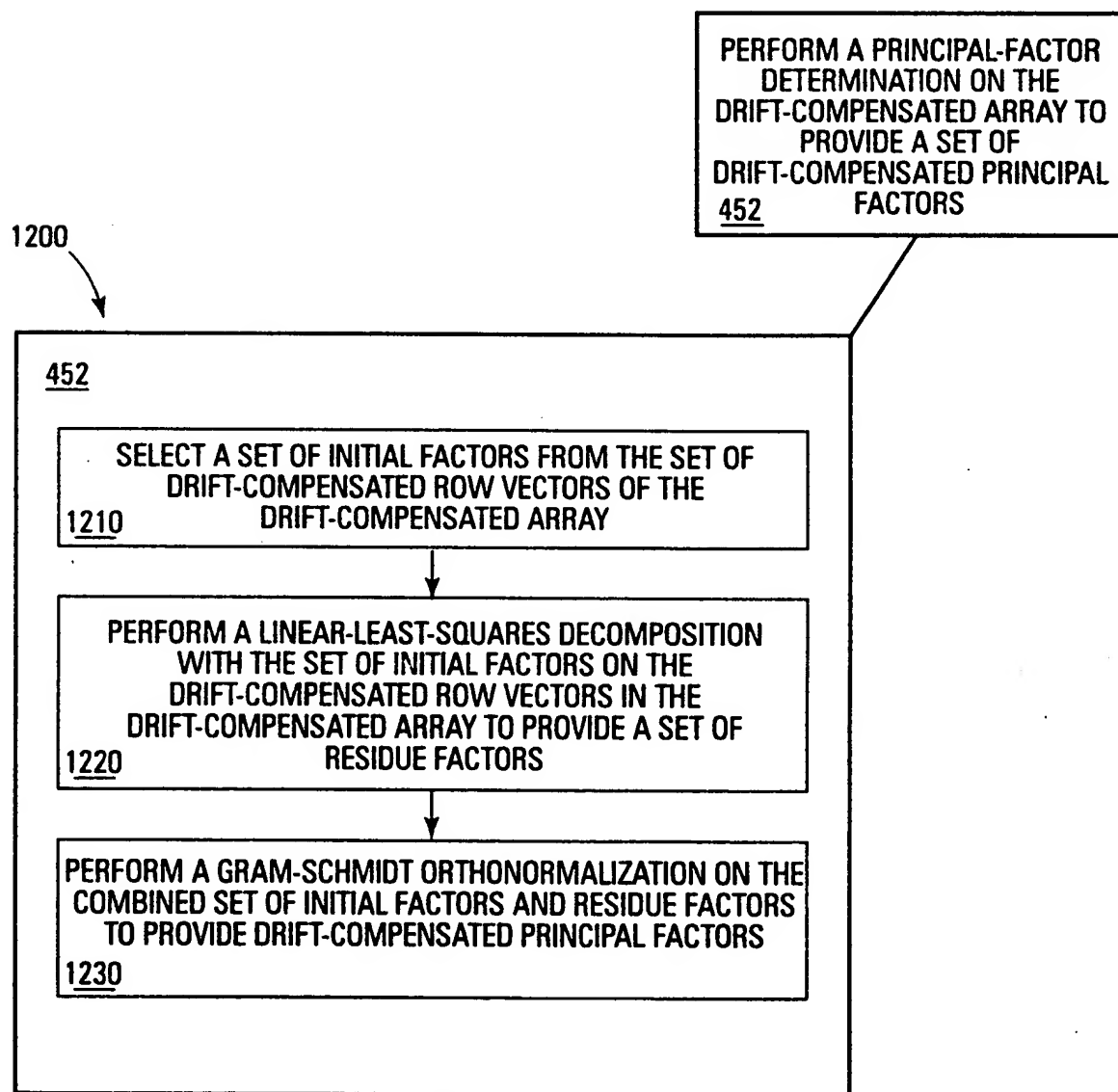


Fig. 12

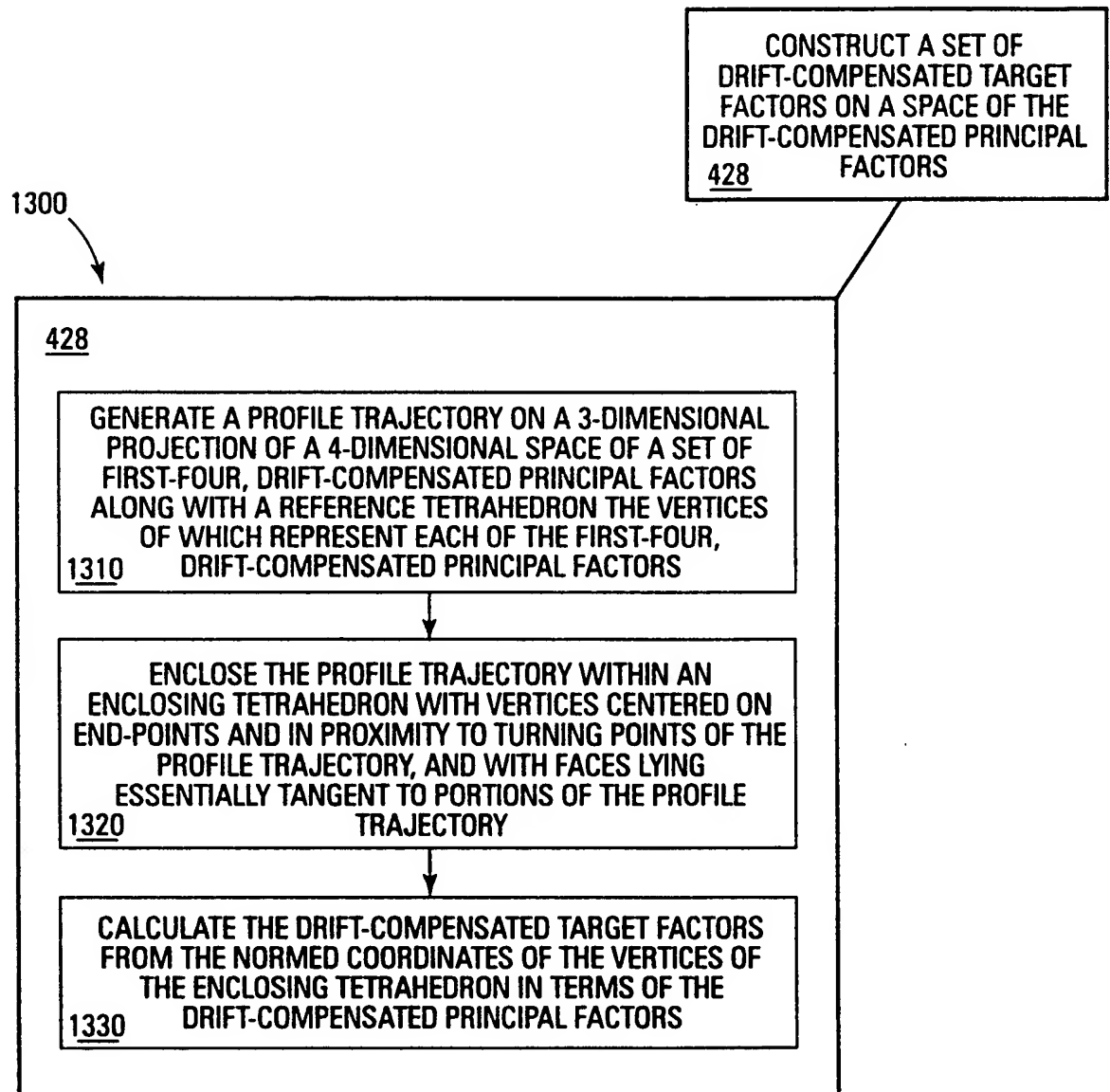


Fig. 13

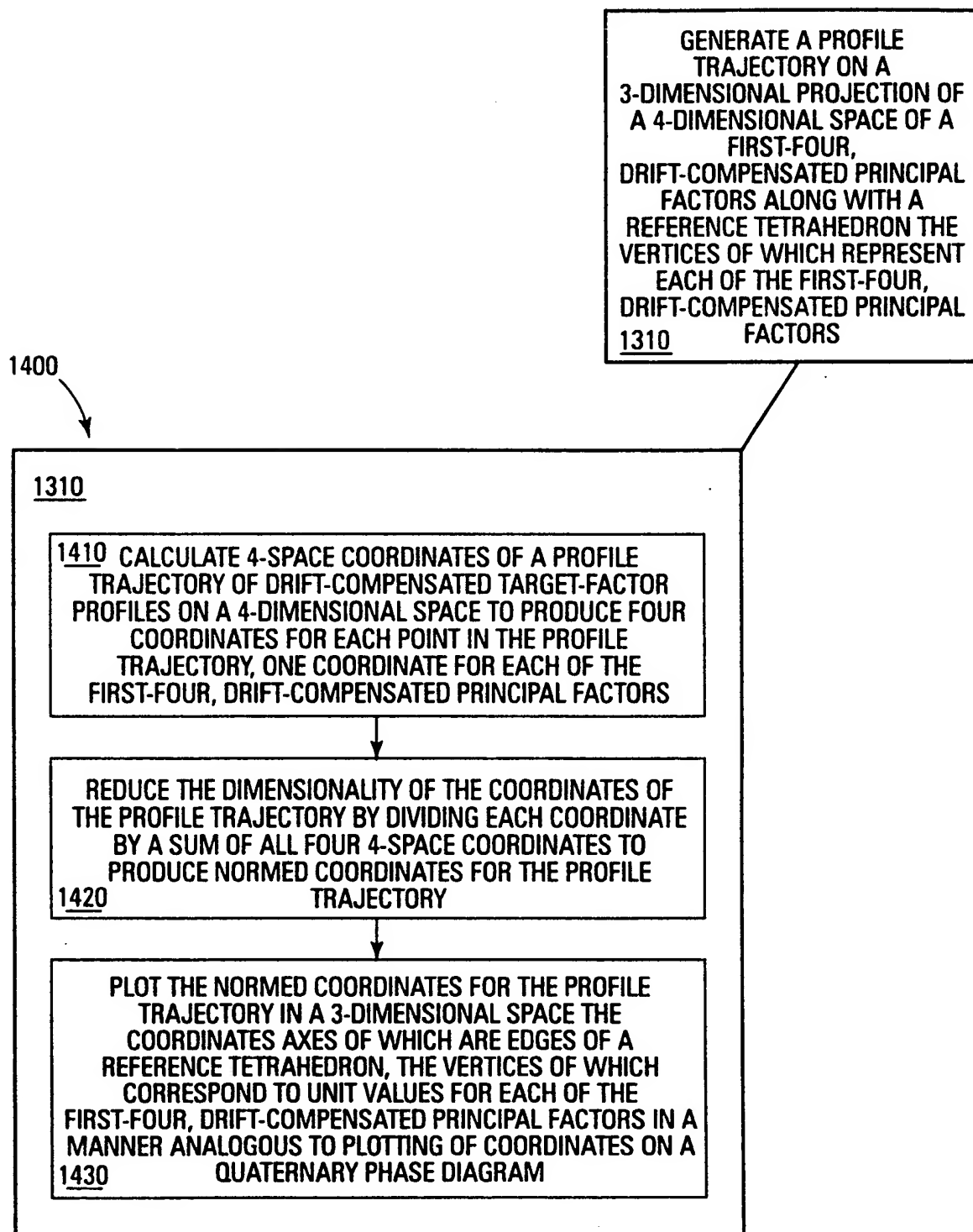
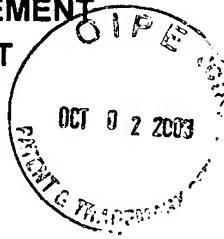


Fig. 14



ENCLOSE THE PROFILE TRAJECTORY WITHIN AN ENCLOSING TETRAHEDRON WITH VERTICES CENTERED ON END-POINTS AND IN PROXIMITY TO TURNING POINTS OF THE PROFILE TRAJECTORY, AND WITH FACES LYING ESSENTIALLY TANGENT TO PORTIONS OF THE PROFILE TRAJECTORY; AND, CALCULATE THE DRIFT-COMPENSATED TARGET FACTORS FROM THE NORMED COORDINATES OF THE VERTICES OF THE ENCLOSING TETRAHEDRON IN TERMS OF THE DRIFT-COMPENSATED PRINCIPAL FACTORS
1320 & 1330

1500

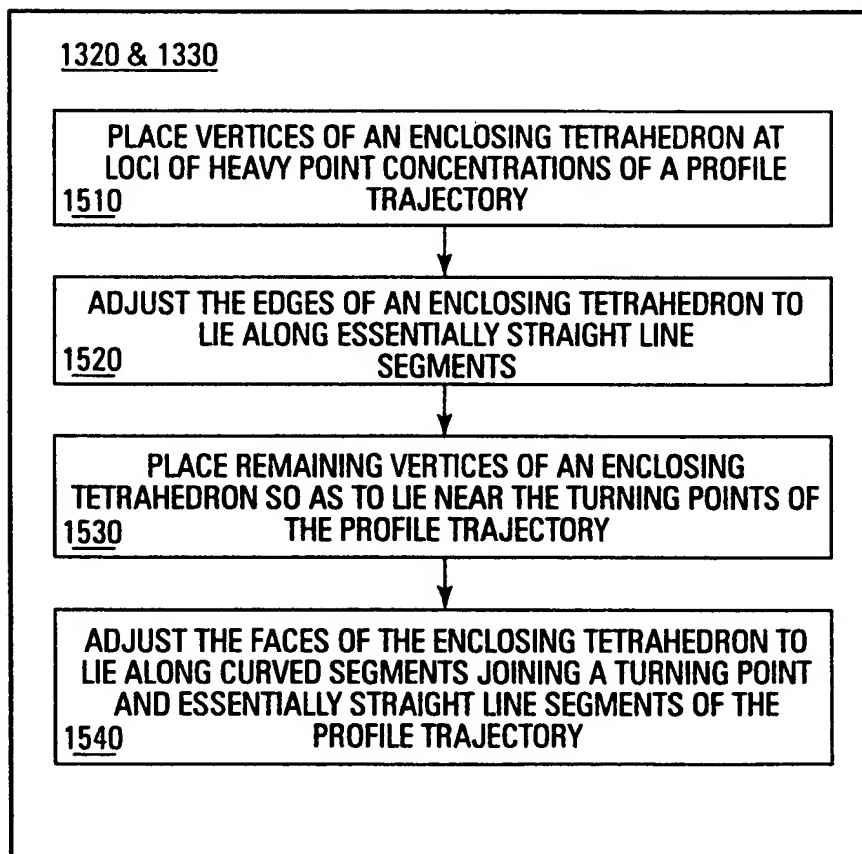


Fig. 15



1600

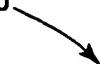
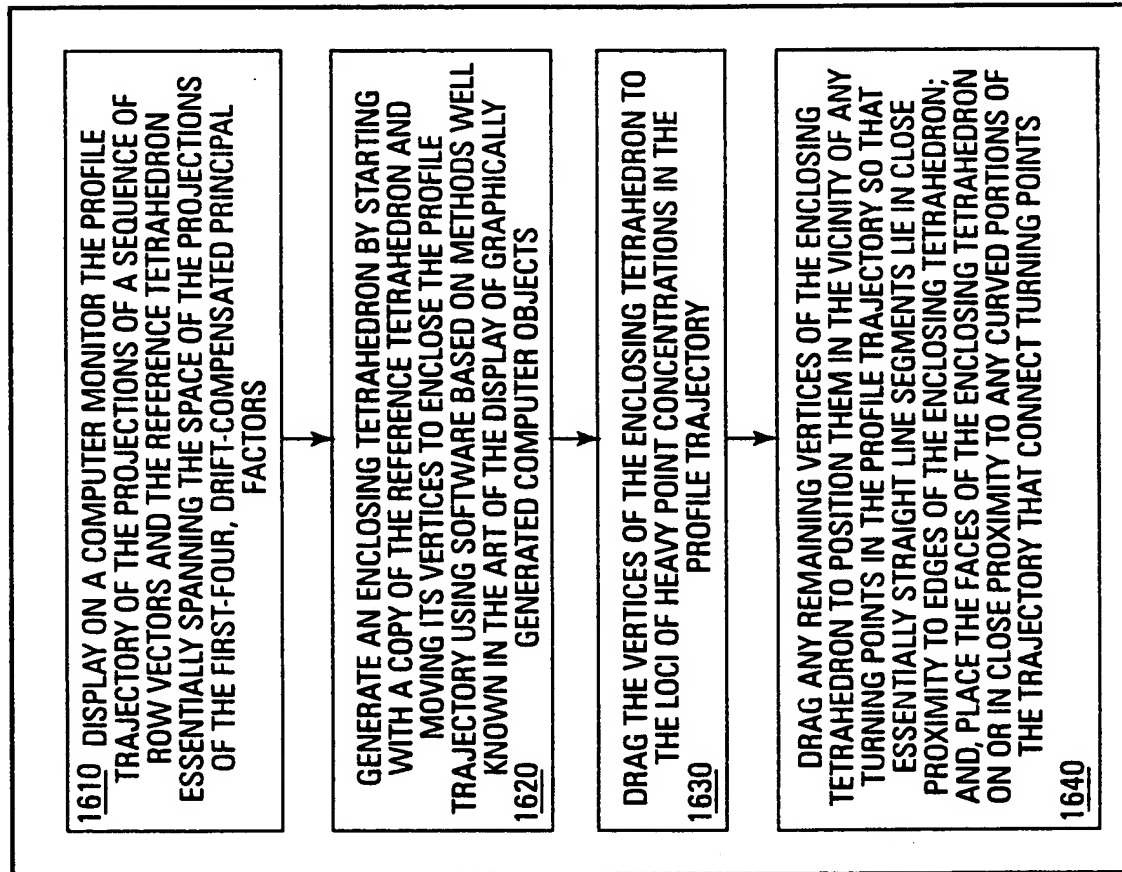


Fig. 16a

Fig. 16b

Fig. 16

Fig. 16a



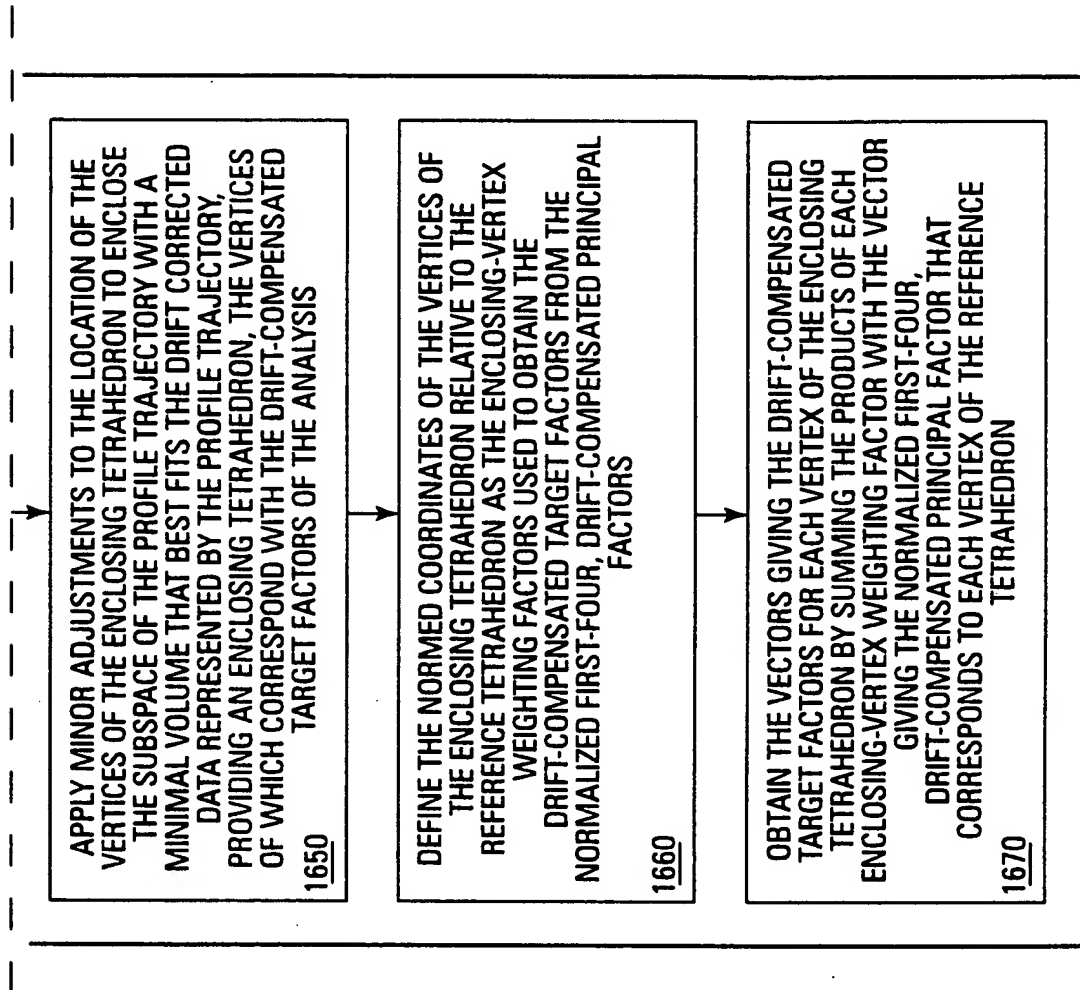
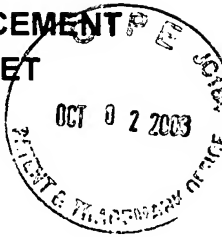
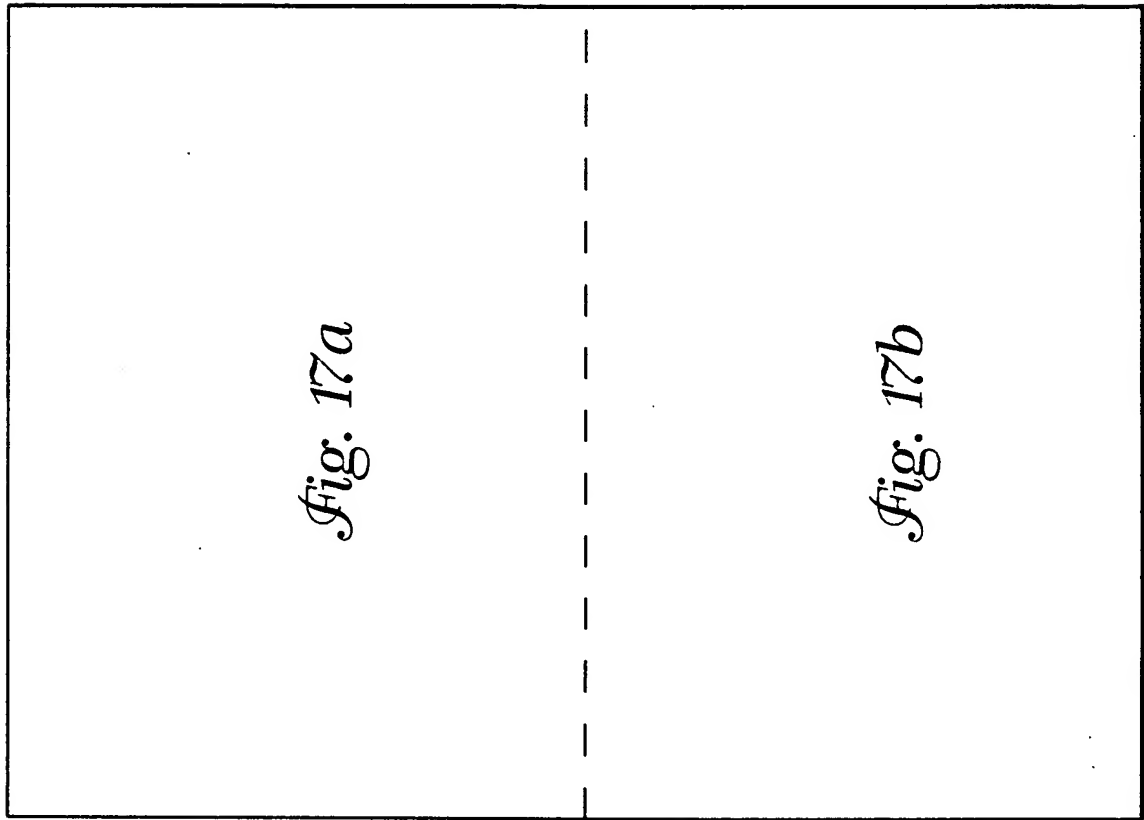


Fig. 16b



Fig. 17



1700

An arrow pointing from the number 1700 to the top-left corner of the rectangular frame in Fig. 17.



Fig. 17a

OUTPUT ANALYTICAL RESULTS
SELECTED FROM THE GROUP
CONSISTING OF A SET OF
DRIFT-COMPENSATED SCALED
TARGET-FACTOR PROFILES
DERIVED FROM THE SET OF
TARGET-FACTOR WEIGHTING
FACTORS, AND THE SET OF
DRIFT-COMPENSATED TARGET
FACTORS

436

436

OBTAIN THE SET OF DRIFT-COMPENSATED TARGET-FACTOR
PROFILE VALUES BY APPLYING THE SET OF
DRIFT-COMPENSATED TARGET FACTORS TO THE PROFILE
TRAJECTORY BY ASCERTAINING THE NORMED
COORDINATES OF EACH POINT ON THE PROFILE
TRAJECTORY, I.E. THE TARGET-FACTOR WEIGHTING
FACTORS, FROM THE ENCLOSING TETRAHEDRON IN A
MANNER ANALOGOUS TO FINDING COORDINATES OF A
POINT ON A QUARTERNARY PHASE DIAGRAM

COMPOSE A REFERENCE VECTOR BY SUMMING THE
PRODUCTS FROMED BY MULTIPLYING THE VECTORS
CORRESPONDING TO THE DRIFT-COMPENSATED TARGET
FACTORS BY THE TARGET-FACTOR WEIGHTING FACTORS,
FOR EACH POINT ON THE PROFILE TRAJECTORY

SCALE THE AMPLITUDE OF THE RESULTING REFERENCE
VECTOR TO OPTIMALLY MATCH THE CORRESPONDING ROW
VECTOR COMPENSATED FOR THE EFFECTS OF DRIFT

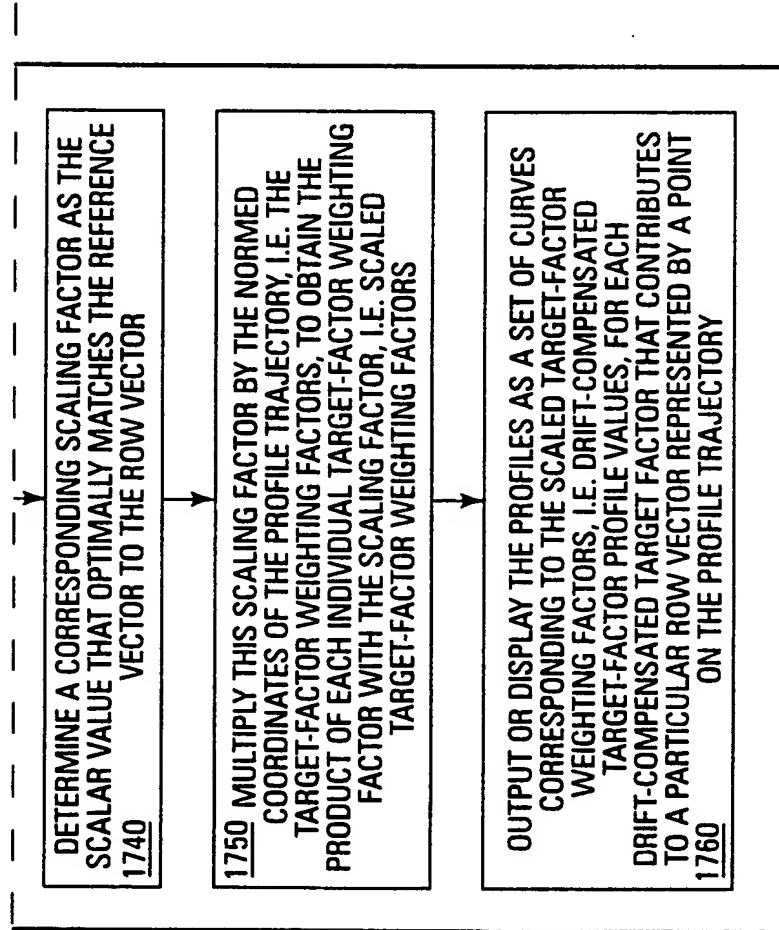
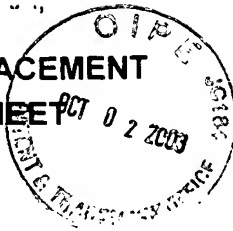


Fig. 17b



1800

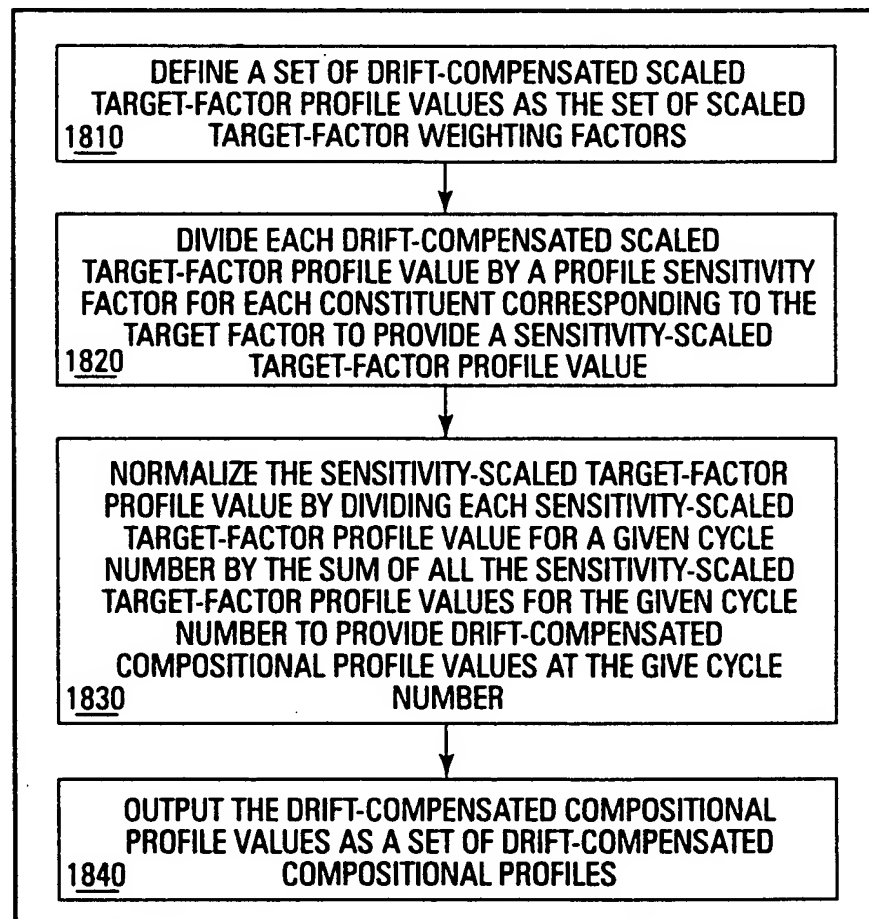


Fig. 18

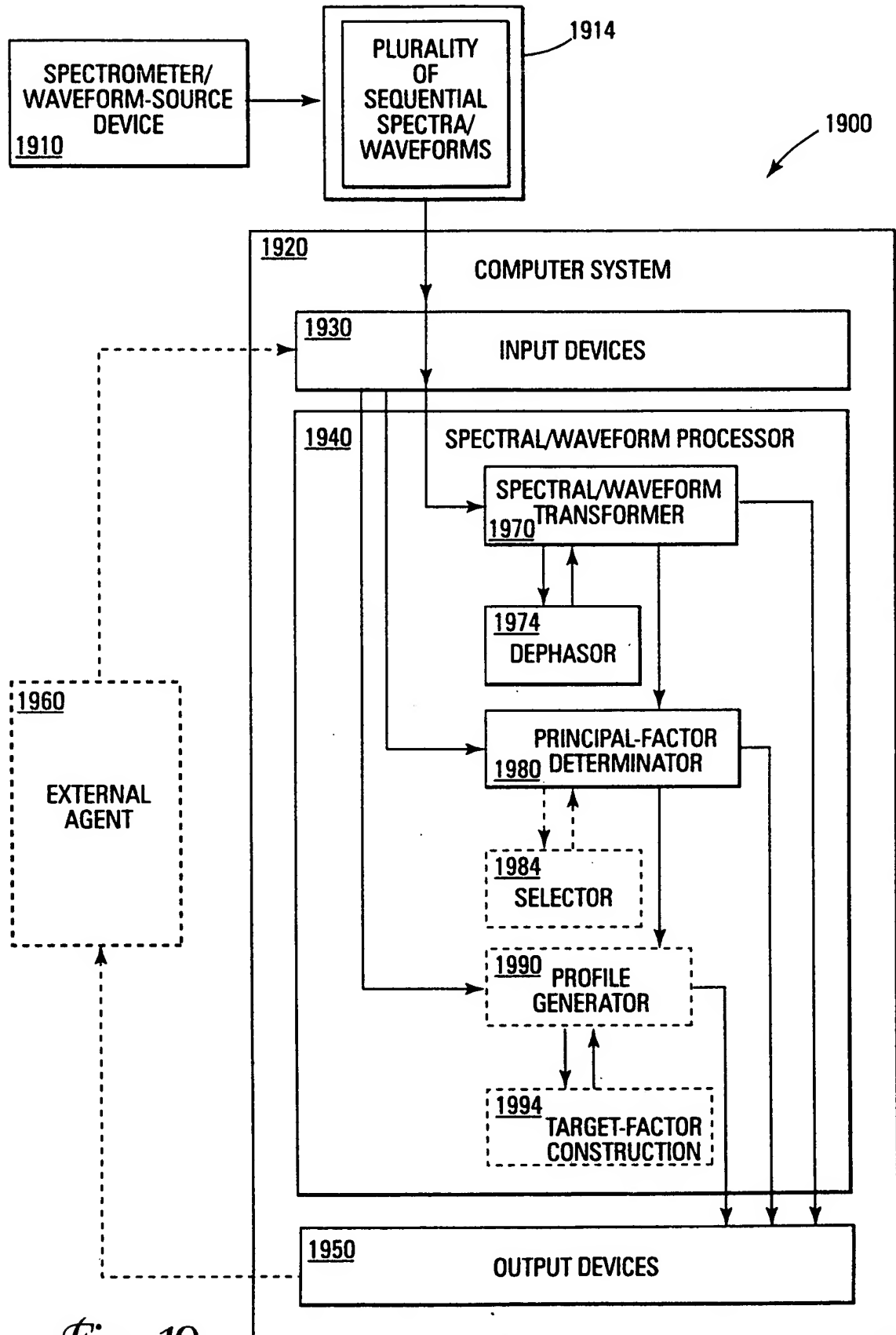


Fig. 19

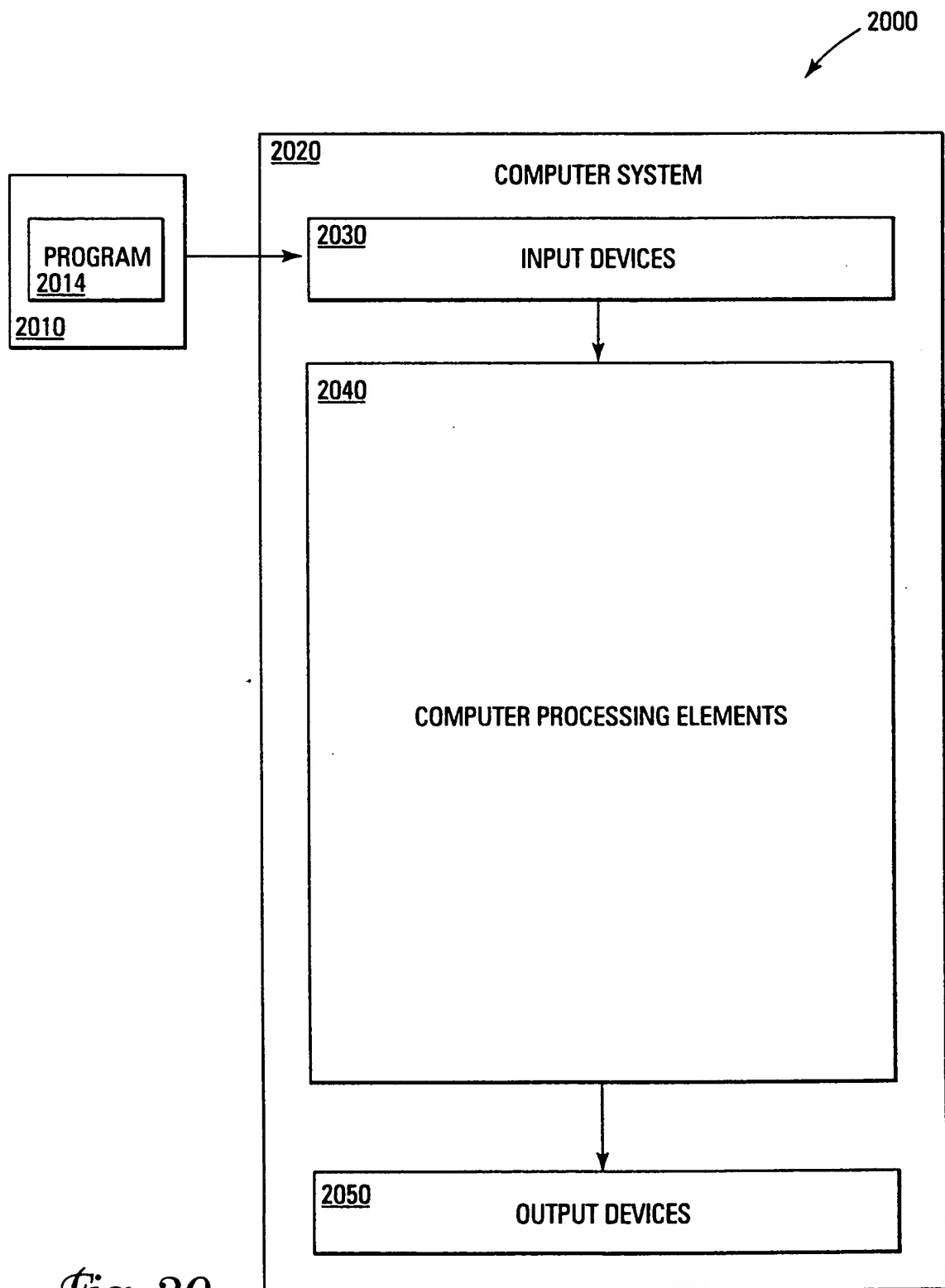
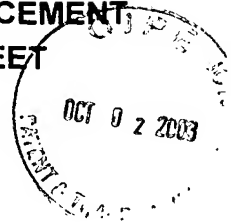


Fig. 20